

What is claimed is:

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1. A method of modifying a three-dimensional model comprised of three-dimensional data defining bones and a polygon mesh, the method comprising:

reducing a resolution of the polygon mesh; and

reducing a number of bones in the three-dimensional model following reducing the resolution of the polygon mesh.

2. The method of claim 1, wherein:

the bones are arranged hierarchically such that a lower-resolution bone branches to a higher-resolution bone; and

reducing the number of bones comprises removing the higher-resolution bone from the three-dimensional model.

3. The method of claim 1, wherein:

the bones are arranged hierarchically such that a lower-resolution bone branches down to two or more succeeding bones, each of the succeeding bones having a higher-resolution than its predecessor; and

reducing the number of bones comprises:

connecting one of the succeeding bones to the lower-resolution bone; and

removing remaining high-resolution bones.

4. The method of claim 3, wherein removing the remaining high-resolution bones comprises removing one or more bones that are between the one of the succeeding bones and the lower-resolution bone.

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5. The method of claim 1, wherein reducing the resolution of the polygon mesh comprises combining polygons in the polygon mesh to decrease a number of polygons in the polygon mesh.

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6. The method of claim 1, wherein:
the three-dimensional model is located a distance from a virtual camera in a three-dimensional space that the three-dimensional model inhabits; and

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reductions in the resolution of the polygon mesh and the number of bones are performed if the three-dimensional model is greater than a predetermined distance from the virtual camera.

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7. The method of claim 1, further comprising:
receiving an instruction to reduce the number of bones in the three-dimensional model;

wherein, the number of bones is reduced in accordance with the instruction.

8. A method of modifying a three-dimensional model comprised of three-dimensional data defining a polygon mesh, the method comprising:

constructing a bones infrastructure for the polygon mesh;
5 removing edges of polygons in the polygon mesh to reduce a resolution of the polygon mesh;

receiving an instruction to reduce a number of bones in the bones infrastructure;

reducing the number of bones in the bones infrastructure in response to the instruction; and

10 associating the polygon mesh with the bones infrastructure having a reduced number of bones.

9. The method of claim 8, wherein the bones are arranged hierarchically such that a lower-resolution bone branches to a higher-resolution bone; and

15 reducing the number of bones comprises removing the higher-resolution bone from the three-dimensional model.

20 10. The method of claim 8, wherein:

the bones are arranged hierarchically such that a lower-resolution bone branches down to two or more succeeding bones,

each of the succeeding bones having a higher-resolution than its predecessor; and

reducing the number of bones comprises:

connecting one of the succeeding bones to the lower-

resolution bone; and

removing remaining high-resolution bones.

11. An article comprising a machine-readable medium which stores executable instructions to modify a three-dimensional model comprised of three-dimensional data defining bones and a polygon mesh, the instructions causing a machine to:

reduce a resolution of the polygon mesh; and

reduce a number of bones in the three-dimensional model following reducing the resolution of the polygon mesh.

12. The article of claim 11, wherein:

the bones are arranged hierarchically such that a lower-resolution bone branches to a higher-resolution bone; and

reducing the number of bones comprises removing the higher-resolution bone from the three-dimensional model.

13. The article of claim 11, wherein:

the bones are arranged hierarchically such that a lower-resolution bone branches down to two or more succeeding bones, each of the succeeding bones having a higher-resolution than its predecessor; and

reducing the number of bones comprises:

connecting one of the succeeding bones to the lower-resolution bone; and

removing remaining high-resolution bones.

14. The article of claim 13, wherein removing the remaining high-resolution bones comprises removing one or more bones that are between the one of the succeeding bones and the lower-resolution bone.

15. The article of claim 11, wherein reducing the resolution of the polygon mesh comprises combining polygons in the polygon mesh to decrease a number of polygons in the polygon mesh.

16. The article of claim 11, wherein:

the three-dimensional model is located a distance from a virtual camera in a three-dimensional space that the three-dimensional model inhabits; and

5 reductions in the resolution of the polygon mesh and the number of bones are performed if the three-dimensional model is greater than a predetermined distance from the virtual camera.

17. The article of claim 11, further comprising instructions that cause the machine to:

receive an instruction to reduce the number of bones in the three-dimensional model;

wherein, the number of bones is reduced in accordance with the instruction.

18. An article comprising a machine-readable medium that stores executable instructions to modify a three-dimensional model comprised of three-dimensional data defining a polygon mesh, the instructions causing a machine to:

20 construct a bones infrastructure for the polygon mesh;
remove edges of polygons in the polygon mesh to reduce a resolution of the polygon mesh;

receive an instruction to reduce a number of bones in the bones infrastructure;

reduce the number of bones in the bones infrastructure in response to the instruction; and

5 associate the polygon mesh with the bones infrastructure having a reduced number of bones.

19. The article of claim 18, wherein the bones are arranged hierarchically such that a lower-resolution bone branches to a higher-resolution bone; and

reducing the number of bones comprises removing the higher-resolution bone from the three-dimensional model.

20. The article of claim 18, wherein:

15 the bones are arranged hierarchically such that a lower-resolution bone branches down to two or more succeeding bones, each of the succeeding bones having a higher-resolution than its predecessor; and

reducing the number of bones comprises:

20 connecting one of the succeeding bones to the lower-resolution bone; and

removing remaining high-resolution bones.

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21. An apparatus to modify a three-dimensional model comprised of three-dimensional data defining bones and a polygon mesh, the apparatus comprising:

a memory that stores executable instructions; and

a processor that executes the instructions to:

reduce a resolution of the polygon mesh; and

reduce a number of bones in the three-dimensional model following reducing the resolution of the polygon mesh.

22. The apparatus of claim 21, wherein:

the bones are arranged hierarchically such that a lower-resolution bone branches to a higher-resolution bone; and

reducing the number of bones comprises removing the higher-resolution bone from the three-dimensional model.

23. The apparatus of claim 21, wherein:

the bones are arranged hierarchically such that a lower-resolution bone branches down to two or more succeeding bones, each of the succeeding bones having a higher-resolution than its predecessor; and

reducing the number of bones comprises:

connecting one of the succeeding bones to the lower-resolution bone; and

removing remaining high-resolution bones.

5 24. The apparatus of claim 23, wherein removing the remaining high-resolution bones comprises removing one or more bones that are between the one of the succeeding bones and the lower-resolution bone.

10 25. The apparatus of claim 21, wherein reducing the resolution of the polygon mesh comprises combining polygons in the polygon mesh to decrease a number of polygons in the polygon mesh.

15 26. The apparatus of claim 21, wherein:
the three-dimensional model is located a distance from a virtual camera in a three-dimensional space that the three-dimensional model inhabits; and

20 reductions in the resolution of the polygon mesh and the number of bones are performed if the three-dimensional model is greater than a predetermined distance from the virtual camera.

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27. The apparatus of claim 21, wherein the processor executes instructions to receive an instruction to reduce the number of bones in the three-dimensional model; and

wherein, the number of bones is reduced in accordance with the instruction.

28. An apparatus to modify a three-dimensional model comprised of three-dimensional data defining a polygon mesh, the apparatus comprising:

a memory that stores executable instructions; and

a processor that executes the instructions to:

construct a bones infrastructure for the polygon mesh;

remove edges of polygons in the polygon mesh to reduce a resolution of the polygon mesh;

receive an instruction to reduce a number of bones in the bones infrastructure;

reduce the number of bones in the bones infrastructure in response to the instruction; and

associate the polygon mesh with the bones infrastructure having a reduced number of bones.

29. The apparatus of claim 28, wherein the bones are arranged hierarchically such that a lower-resolution bone branches to a higher-resolution bone; and

reducing the number of bones comprises removing the
5 higher-resolution bone from the three-dimensional model.

30. The apparatus of claim 28, wherein:

the bones are arranged hierarchically such that a lower-resolution bone branches down to two or more succeeding bones, each of the succeeding bones having a higher-resolution than
10 its predecessor; and

reducing the number of bones comprises:

connecting one of the succeeding bones to the lower-resolution bone; and

15 removing remaining high-resolution bones.

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